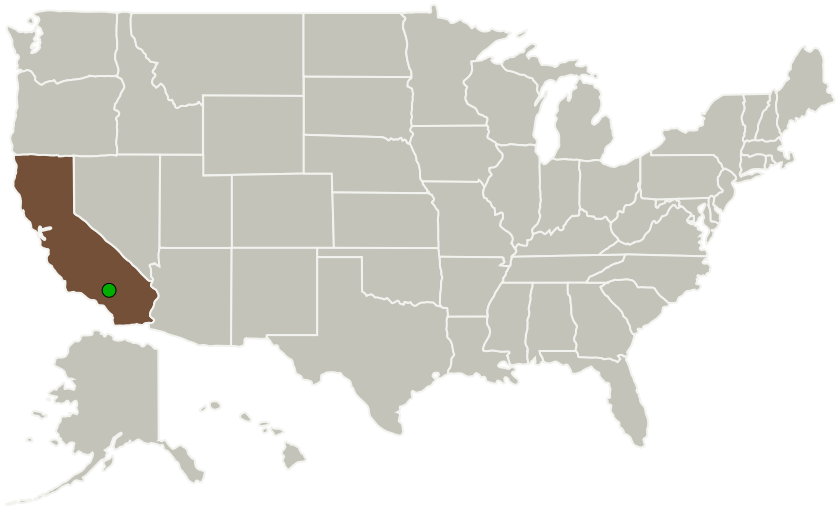
Fused Reality for Enhanced Flight Test Capabilities, Phase II

Completed Technology Project (2010 - 2012)

Project Introduction

In terms of relevancy to piloted evaluation, there remains no substitute for actual flight tests even when considering the fidelity and effectiveness of modern ground-based simulators. In addition to real world cueing, flight test provides subtle but key intangibles that cannot be duplicated in a ground-based simulator. There is, however, a cost to be paid for the benefits of flight in terms of budget, mission complexity, and safety. New technologies and test procedures are therefore needed to maximize the investments and reduce some of the related costs associated with flight test. To address this need, Systems Technology, Inc. is developing a Fused Reality (FR) Flight system that allows a virtual environment to be integrated with the test aircraft so that tasks such as aerial refueling, formation flying, or approach and landing can be accomplished without additional aircraft or risk of operating in close proximity to the ground or other aircraft. Furthermore, for the first time, the dynamic motions of the simulated objects can be directly correlated with the responses of the test aircraft. The FR Flight system will allow real-time observation of and manual interaction with the cockpit environment that serves as a frame for the virtual out-the-window scene.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Systems Technology, Inc	Lead Organization	Industry	
Armstrong Flight Research Center(AFRC)	Supporting Organization	NASA Center	Edwards, California

Primary U.S. Work Locations
California

Project Transitions

January 2010: Project Start

July 2012: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/139023)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Systems Technology, Inc

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

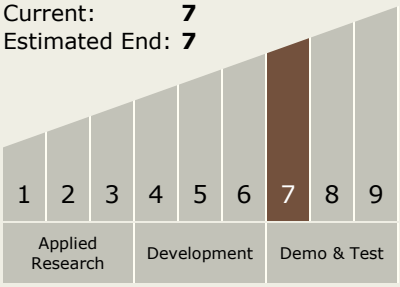
Carlos Torrez

Principal Investigator:

Edward Bachelder

Technology Maturity (TRL)

Start: **7**
Current: **7**
Estimated End: **7**



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Technology Areas

Primary:

- TX15 Flight Vehicle Systems
  - TX15.2 Flight Mechanics
    - TX15.2.3 Flight Mechanics Testing and Flight Operations

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System